INTELLIGENCE FROM AMERICAN SCIENTIFIC STATIONS.

GOVERNMENT ORGANIZATIONS.

Geological survey.

Mount Shasta. — In *Science*, No. 48, was mentioned Mr. Gilbert Thompson's suggestion, that Mount Shasta, in northern California, would be a good point upon which to establish a permanent meteorological station like those on the summits of Mount Washington and Pike's Peak. The following notes, obtained from Mr. Thompson, will perhaps make more apparent its suitability for that purpose.

Mount Shasta is a volcanic peak having an altitude of 14,511 feet above sea-level, and situated in latitude 41° 24′ 30″, and longitude 122° 11′ 34″. So prominent is it, that it rivets the attention even at a distance of over a hundred miles; and at Berryvale, where it rises over 11,000 feet in a distance of ten miles, its appearance is majestic. It is not part of a mountain range, and no mountains within a radius of forty miles from it attain the elevation of 9,000 feet. The greatest length of the north-west slope is sixteen miles to the edge of Little Shasta valley, which has an elevation of 3,000 feet. The south-western slope to Elk Flat (where the elevation is 4,000 feet) has a length of eight miles. The highest divide, six miles to the north-west, has an altitude of 6,000 feet; while the divide of the Sacramento River, ten miles to the westward, has an altitude of only 3,500 feet. The distance from the summit in any direction, to the contour of 8,000 feet, will not exceed four miles. The prominence and isolation of this volcanic cone are therefore obvious.

The point at which the growth of timber receives its greatest check is at an elevation of 8,200 feet. This limiting-line is a conspicuous feature in the view of the mountain as seen from a distance of forty or fifty miles, as it contrasts sharply with the snow. The last tree (so small that it was put in the vest-pocket) was found at 10,130 feet.

The streams that have their origin in the melting of the snows of Mount Shasta make their appearance suddenly as rushing torrents, which subside during the night, leaving only pools of clear water, which also gradually disappear. On the east side they have eroded deep cañons, in two of which are waterfalls 400 feet in height. After the first snow, the flow of water from the mountain ceases until the following spring. Only two streams can be considered as permanent. There are but few springs; as all this water sinks near the base of the peak, to re-appear at distant places in an unexpected manner as springs of immense size. The hot sulphur-springs, or solfataras as perhaps they should properly be termed, which are now in active operation at the summit of the peak, once extended considerably farther to the south-east. An additional spring was discovered last summer, under the summit to the eastward. The myth of the Win-tún Indians, that Mount Shasta is the assembly-house of the gods, probably had its origin in the existence of these springs. The more prosaic imagination of the topographer suggests that the steam from these vents might be utilized to heat a station built on the summit of the mountain.

Topographic work in the southern Appalachians. — Party No. 2 of the southern Appalachian division, Morris Bien in charge, was engaged during the past season in the north-eastern part of Tennessee, the north-western part of North Carolina, south-western Virginia, and southern West Virginia, — an area of about six thousand square miles, lying between parallels 36° and 37° 30′, and meridians 81° and 83° 30′.

The topography of this area is of the same character as that found by party No. 3 in the Tennessee valley; except, that, in the portion lying in North Carolina, the character of the former is combined with a system of spurs radiating from a sort of central knot, — a feature reminding one somewhat of the Rocky Mountains. This similarity to western topography increases as we go southward on the eastern side of the range, until, in the Black Mountains, it becomes very marked. Another striking difference is, that here there is no apparent underground drainage of the sink-hole nature. In south-western Virginia, however, the drainage is similar to that of the Tennessee valley, and quite as striking.

A curious example of the sinking and re-appearing of streams is found in Scott county, Va. There is a completely enclosed basin in which a considerable creek gathers, and flows toward the Clinch River, from which it is separated by a continuous ridge about three hundred feet high. At the foot of this ridge the stream disappears, and, as has been proved by marked slabs, flows beneath the ridge and under the river, appearing as a spring about half a mile from the river, and on the opposite side of it. The underground course of the stream must be somewhat like an inverted siphon. The sink of the creek is about twenty feet higher than the river, and nearly the same height above its outlet at the spring.

In the same county is the natural tunnel of Stock Creek. At about eight miles from its head, the ravine in which Stock Creek flows is closed in by a distinct cross-ridge about four hundred and fifty feet high. The creek, which is about fifteen feet wide and three feet deep, has made an S-shaped tunnel through the ridge about nine hundred feet long, and averaging fifty feet in width. It is nowhere less than ten feet high, rising at the entrance and outlet to over sixty feet.

The entrance is an almost perfect archway in a perpendicular rock wall which is nearly four hundred feet high, while the outlet is in a remarkable perfectly dome-shaped rotunda of which about half is wanting. The highest point of the dome is about four hundred and fifty feet above the creek-bed. Curiously enough, when visited last September, the creek sank entirely at the entrance, and re-appeared only at the outlet, not a drop of water being visible in the tunnel; whereas during high water a roaring torrent rushes through it. A preliminary line of the South Atlantic and Ohio railroad has been located in the

tunnel; and they propose to make a secondary tunnel, cutting an angle of the S in the natural tunnel.

There are enormous quantities of marketable timber throughout this whole section; cherry, walnut, oak, chestnut, poplar, hickory, etc., growing everywhere. In the extreme south-west of Virginia, fine large poplars are found in great abundance. In Shady Valley, Tenn., is an extensive forest of several thousand acres, in which are to be found most magnificent pines, straight as an arrow, and many over a hundred and fifty feet high.

The mineral wealth of the country has just begun to receive proper attention. Within the past few years the well-known Cranberry iron-mines have been opened, the ore from which is of very fine quality; and it is claimed that the same body can be traced, almost continuously, far north into Virginia. There are several copper-mines in the north-western part of North Carolina which await only the influx of capital to produce in large quantities. Gold has also been found in this section in small amount.

Throughout that part of south-western Virginia lying north-west of Clinch Mountains, coal is found in almost every ridge, and, at Pocahontas, is mined in large quantities. Copper and iron have also been found scattered throughout this section. This region needs only railroad facilities to become one of the richest districts in the east. It can supply coal and timber in enormous quantities; and, from all accounts, iron and copper mining would also be profitable.

RECENT PROCEEDINGS OF SCIENTIFIC SOCIETIES.

Franklin institute, Philadelphia.

Feb. 20. — Mr. S. Lloyd Wiegand presented a further communication respecting the use of cast-iron in the construction of steam-boilers; illustrating his remarks by bursting, under hydrostatic pressure, a model of the exploded Gaffney boiler, which had been the cause of a protracted legal controversy in Philadelphia. Mr. Wiegand protested against the sweeping condemnation of cast-iron as a material for steam-boiler heads, and especially deprecated the effort that had been made to commit the institute as a scientific body, to suit an expression of opinion without experimental verification. On Mr. Washington Jones's motion, a resolution was adopted, in which the national Congress is urged to appoint a commission of experts for the testing of iron, steel, and other materials used for structural purposes, and to make a suitable appropriation for the work of the commission. —— Mr. David Cooper exhibited a remarkably fine suite of specimens of direct life-size camera portraits, admirably illustrating the progress which has lately been made in dry-plate photography. These pictures were taken with dry plates prepared by the Eastwick dry-plate company of New York.

Canadian institute, Toronto.

Feb. 16. — Prof. J. Playfair McMurrich read a paper on the osteology of Amiurus catus, one of a series on the morphology and development of that fish. The paper treated particularly of the high specialization of Amiurus, as instanced by the small amount of cartilage in the skull, and by the great modification of the maxillae and of the pectoral and dorsal fins.

Princeton science club.

Feb. 14. — Professor George Macloskie reported his researches on the tracheal organs of insects, by which it appears that their spiral filaments are not independent structures, but crenulations or inward foldings, with thickening of the chitinous wall; that the spirals are really tubular, fissured at the line of infolding, and continuous with the enclosing wall. The function of aeration is discharged by air passing, not through the wall into the blood, but directly to the tissues by lung-like terminal cells, long ago described by Louis Agassiz, and shown by Max Schultze to be especially abundant near the luminous organs of the glow-worm.

Prof. H. F. Osborn reported, that in the opossum, unlike the kangaroos, the superior and inferior mesenteric arteries and coeliac axis arise from a common trunk above the renal arteries, — a reduction similar to that found in the monotremes.

Prof. W. B. Scott stated that the hind-foot of the American miocene Enteledon shows, like the European, the third and fourth metatarsals greatly enlarged, the second and eighth very rudimentary. The third is borne entirely by the external cuneiform; the middle cuneiform is very small, and coalesced with the external cuneiform; and the internal is very narrow, and articulates above with the navicular, and below with a hook-like process of the third metatarsal. The rudimentary second metatarsal is wedged in between the middle and internal cuneiforms. This type of foot corresponds to Kovalevsky's 'inadaptive type of reduction,' nearly half of the bearing-surface of the tarsus being unemployed.

Dr. McCay called the attention of the club to a letter in the last number of the *Jahrbuch für mineralogie*, from Professor Sandberger of Würzburg. In a pamphlet which appeared recently in Germany, McCay had attacked Sandberger respecting his alleged discovery of the rhombic modification of speiskobalt. McCay has proven that the honor of the discovery is due to Breithaupt of Freiberg; and Sandberger, convinced by the ample evidence, has in his letter admitted the correctness of the arguments advanced, and signified his readiness to withdraw his name 'spathiopyrite,' and to substitute in its place the Breithaupt term, 'saffiorite.' Dr. McCay further reported upon eight analyses of argillaceous limestones, several of which seemed admirably fitted for making hydraulic cement.

Prof. C. G. Rockwood and Mr. Fine gave synthetic